LISTING OF CLAIMS

This listing of claims will replace all prior versions and listings of claims in the Application.

1 -17. **Cancelled**

18.   **(Previously Presented)** A method for remote emissions sensing with NO_x detection capability comprising the steps of:

taking an ambient reading of ambient NO_x concentration present prior to a vehicle passing by a system for remote emissions sensing;

taking an exhaust plume reading of an exhaust plume of the vehicle as the vehicle passes by the system for remote emissions sensing;

subtracting a baseline intensity from the exhaust plume reading to compensate for changes in radiation intensity, wherein the baseline intensity is interpolated using a substantially linear region over an absorption dip; and

subtracting the ambient reading from the exhaust plume reading to provide a concentration reading for the NO_x present in the vehicle emissions.

19.   **(Previously Presented)** The method of claim 18 further comprising the steps of taking a blocked beam reading prior to taking an exhaust plume reading and when the vehicle is in a beam path of a source beam of the system.

20.   **(Previously Presented)** The method of claim 19, wherein the ambient reading is taken at predetermined intervals and wherein a most recent ambient reading is stored and used in connection with the blocked beam and exhaust plume readings for each vehicle.

21.   **(Previously Presented)** The method of claim 19, wherein the blocked beam reading measures baseline current or noise in the system and wherein the blocked beam reading is taken after the ambient reading but before the exhaust plume reading.

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22.   **(Previously Presented)** The method of claim 18, wherein the ambient reading is initiated at an occurrence of a predetermined trigger event.

23.   **(Previously Presented)** The method of claim 18, wherein a range of wavelengths over which readings are taken is selected to be substantially centered around a characteristic wavelength such that a number of data points for which there is no significant NO_x absorption is minimized.

24.   **(Previously Presented)** The method of claim 19, wherein the ambient reading is taken just prior to the blocked beam reading.

25.   **(Previously Presented)** A system, having a source beam of radiation, for remote emissions sensing with NO_x detection capability comprising :

    means for taking an ambient reading of ambient NO_x concentration present prior to a vehicle passing by the system;

    means for taking an exhaust plume reading of an exhaust plume of a vehicle;

    means for subtracting a baseline radiation intensity from the exhaust plume reading to compensate for changes in an intensity of the source beam of radiation, wherein the baseline intensity is interpolated using a substantially linear region over an absorption dip; and

    means for subtracting the ambient reading from the exhaust plume reading.

26.   **(Previously Presented)** The system as claimed in claim 25 further comprising means for taking a blocked beam reading when the vehicle is in a beam path of the source beam; and

    means for subtracting the blocked beam reading from the exhaust plume reading.

27.   **(Previously Presented)** The system of claim 26, wherein the blocked beam reading measures baseline current or noise in the system, and where the

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blocked beam reading is taken after the ambient reading but before the exhaust plume reading.

28.   **(Previously Presented)** The system of claim 25, wherein a range of wavelengths over which readings are taken is selected to by substantially centered around a characteristic wavelength such that a number of data points for which there is no significant NO_x absorption is minimized.

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